MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2019/2020

TCP3151 – INTEGRATIVE PROGRAMMING AND TECHNOLOGIES

(All sections / Groups)

14 October 2019
9.00AM – 11.00AM
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 5 pages excluding the cover page.
2. Attempt all FIVE questions.
3. All questions carry equal marks and the distribution of the marks for each question is given.
4. Please write your answers in the Answer Booklet provided.

QUESTION 1 (10 MARKS)

a) Interpreter translates program code into machine code, instructed by instruction. Draw a diagram to show the implementation of Interpreter. What will happen to Interpreter if error is found in the statement?

(4 marks)

b) List **TWO** (2) differences between client-server architecture and distributed object architecture.

(4 marks)

c) Both Component Object Model (COM) and Distributed Component Object Model (DCOM) are Microsoft specification that enables software components in Microsoft Windows to communicate to each other. What is the specialty of DCOM compared to the COM?

(2 marks)

Continued...

QUESTION 2 (10 MARKS)

a) What is distributed system? List **TWO** (2) examples of distributed system.

(3 marks)

b) State the difference between web and native apps in term of distribution and performance.

(4 marks)

c) CORBA (Common Object Request Broker Architecture) is a middleware design that allows application programs to communicate with one another. List **THREE** (3) advantages of using CORBA.

(3 marks)

Continued...

QUESTION 3 (10 MARKS)

a) State **TWO** (2) differences between Parsed Character Data (PCDATA) and Character Data (CDATA) when they are used in the Extensible Markup Language (XML) and Document Type Definition (DTD).

(4 marks)

b) You are required to write a well-formed eXtensible Markup Language (XML) document based on the event list given in the table below.

event name	Birthday party
code	P001
person	Alice Wong
date	12 Nov 2019
venue	McDonald's Cafe
location	Melaka

You are freely to name the tag element and attribute (event code is an attribute) where the name of the tag element and attribute must follow the standard naming rule.

(4 marks)

c) Draw a diagram to illustrate the process of Extensible Stylesheet Language Transformations (XSLT) that performs the conversion works in XML document.

(2 marks)

Continued...

QUESTION 4 (10 MARKS)

a) You are a programmer in a software company. Recently, you are assigned by your department head to design the XML content for a bookshop. Based on the XML document given below, construct a logical view so that you can present it in front of your department head.

```
<?xml version="1.0" encoding="UTF-8"?>
<library>
  <book code="118">
    <title>Java Programming</title>
    <author>Siti Razak</author>
    <year>2014</year>
  </book>
  <book code="121">
    <title>Logic Programming</title>
    <author>Walter Peter</author>
    <author>John Tan</author>
    <year>2015</year>
  </book>
</library>
```

(4 marks)

b) Although your department head has satisfied the logical view that you presented in 4(a), he requires a copy of DTD generated from the XML document given in 4(a). Write a suitable DTD to define the book list for your department head.

(4 marks)

c) How to know an XML document is attached to a DTD?

(2 marks)

Continued...

QUESTION 5 (10 MARKS)

a) Java Native Interface (JNI) is a programming framework that involves the interoperability between java and C programming language. The incomplete code of Test.java is shown below. The java file will interoperate with C file named as Test.c to display some messages. Fill in the empty portion of the Test.java below. What happen if the static initializer code is not written in the Test.java?

(3 marks)

```
Class Test{
   private double num;
   private native void display();

   private void call(){
         System.out.println("Calling from Java");
   }
   public static void main (String args[]){
         Test p = new Test();
         p.display();
   }

   // write your code here (static initializer code)



}
```

b) Based on the code of Test.java in 5(a), fill in the empty portion of native method in the Test.c below.

(4 marks)

```
JNIEXPORT void JNICALL Java_Test_display (JNIEnv *env, jobject obj){

   // write your code here (to obtain object class and id of the field num)



   value = (*env)->GetIntField(env, obj, fid);
   printf("Number = %f\n", value);
}
```

c) Write the code to access the call method in the Test.java from Test.c given in 5(b).

(3 marks)

End of Paper